PH.D. IN WATERSHED SCIENCE

Sustainable management of freshwater resources is an increasingly important and complex challenge in Colorado and worldwide, and we need scientists who can address complex water issues. The watershed science program focuses on how water moves through the landscape, what factors affect its quality, and how to manage water resources. Students in the Ph.D. in Watershed Science program work closely with research scientists in the classroom, laboratory, and field on both basic and applied watershed science research. Students are exposed to cutting-edge field, data analysis, and modeling techniques through flexible programs of study and access to a breadth of water-related courses throughout the university. Students also have opportunities to participate in seminars and field courses.

The Ph.D. in Watershed Science requires 72 credits, most of which are research credits. Coursework includes in-depth classes in the student's area of research, as well as classes that expand into other disciplines. Each student develops an individualized program of study with the guidance and approval of the student's graduate committee. Students in the Ph.D. program develop new contributions to the literature of the watershed science discipline.

Students interested in graduate work should refer to the Graduate and Professional Bulletin.

Program Learning Objectives

Upon successful completion, students will have valuable skills in the following areas:

1. **Systems understanding**: Identify and distinguish systems components and their interactions to explain, illustrate and analyze system understanding.
2. **Watershed science content and principals**: Apply complex watershed science principals to complex problems to develop sustainable solutions.
3. **Problem solving**: Work in teams and communicate effectively using a diverse set of analytical and applied tools.
4. **Interdisciplinary understanding**: Work in an interdisciplinary environment and demonstrate respect for alternative points of view.
5. **Research**: Contribute new research and understanding of watershed processes and issues to the published literature of the discipline.

Institutional Learning Objectives

How the Program Learning Objectives (PLOs) relate to CSU's Institutional Learning Objectives:

- **Creativity**: Through the development of new research, students will employ creative techniques including visual, verbal, and written strategies for analysis and communication.
- **Reasoning**: The Watershed PLOs of problem solving and systems understanding inherently involve reasoning through logical and analytical skills. Students identify and analyze problems as part of their independent research and synthesize the results in their final publications and dissertation.
- **Communication**: Students develop communication skills through the program's course sequence, which includes classes that emphasize both written and oral presentation. They also gain experience with communication through attending professional meetings and through writing and presenting their final research.
- **Responsibility**: Students in the PhD program move from being participants in research into developing and guiding their own research. They engage in collaborations with others internal and external to CSU and practice applying principles of ethical research conduct throughout their studies.
- **Collaboration**: The research experience in the PhD program is a collaborative process with advisors and other collaborators. Students gain experience working with partners from different backgrounds and accounting for different perspectives in their research practice and products.